

TECHNICAL DATA

DELSTAR® CO6 ALLOY

DELSTAR® COBALT-BASED ALLOYS consists of complex carbides in an alloy matrix. They are resistant to wear, galling, and corrosion and retain these properties at high temperatures. Their exceptional wear resistance is due mainly to the unique inherent characteristics of the hard carbide phase dispersed in a CoCr alloy matrix.

DELSTAR® CO6 is the most widely used of the wear resistant cobalt-based alloys and exhibits good all-round performance. It is regarded as the industry standard for general-purpose wear resistance applications, has excellent resistance to many forms of mechanical and chemical degradation over a wide temperature range, and retains a reasonable level of hardness up to 500°C (930°F). It also has good resistance to impact and cavitation erosion. DelStar® Co6 is ideally suited to a variety of hardfacing processes and can be turned with carbide tooling. Examples include valve seats and gates, pump shafts and bearings, erosion shields, and rolling couples. It is often used self-mated.

CORROSION RESISTANCE

The typical electrode potential in sea water at room temperature is -0.25V (SCE). Like stainless steels, DelStar® Co6 corrodes primarily by a pitting mechanism and not by general mass loss in seawater and chloride solutions. Its mass loss in sea water is below 0.05mm per year at 22°C.

NOMINAL CHEMICAL COMPOSITION (MASS%)

ALLOY	Co	Cr	W	C	Others
DelStar® Co6	Bal.	28,0	4,5	1,2	Fe, Ni, Mo, Mn, Si

PHYSICAL PROPERTIES

ALLOY	Hardness	Density	Melting Range
DelStar® Co6	36 - 46 HRC / 380 - 490 HV	~ 8,44 g/cm ³	~ 1285 – 1410°C

NOMINAL HOT HARDNESS (HV resp. DPH) AS CAST

20°C	100°C	200°C	300°C	400°C	500°C	600°C	700°C	800°C	900°C
410	390	356	345	334	301	235	155	138	95

Stellite®, Tribaloy®, Nistelle®, Stelcar®, Jet Kote®, and Delcrome® are registered trademarks of Kennametal Inc.

EXAMPLE FOR TENSILE PROPERTIES AT ROOM TEMPERATURE

PRODUCT FORM	Ultimate Tensile Strength Rm	Yield Stress Rp (0,2%)	Elongation A
Investment Casting, As cast	~ 790 MPa	~ 660 MPa	<< 1%

PRODUCT FORMS

Components				
Castings	Cladded / Hardfaced	PM / HIP parts*	ALM parts*	Wrought**

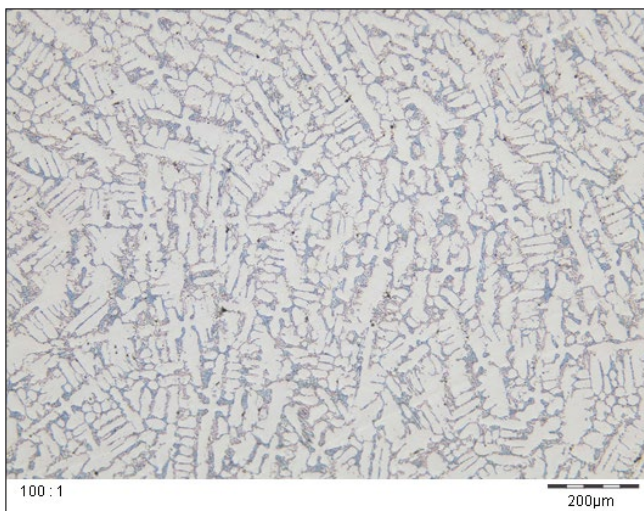
* On special request.

** A separate brochure is available for the wrought forms of this alloy, namely Stellite™ 6B and Stellite™ 6K.

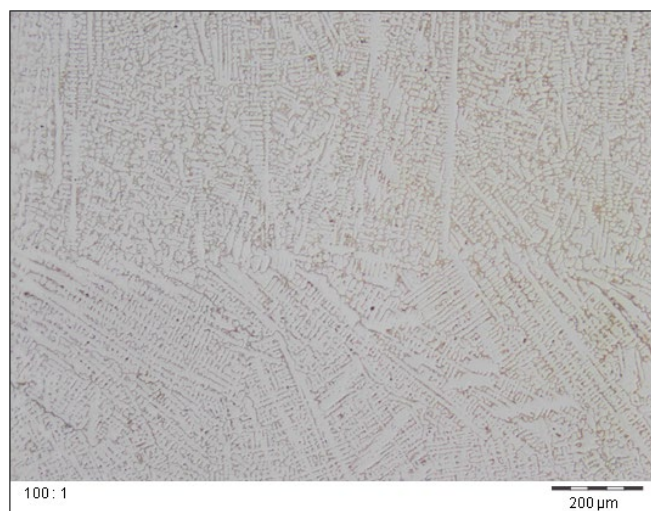
Consumables for Cladding / Hardfacing and Additive Layer Manufacturing (ALM)

Rods	TIG-Welding			Oxy-Acetylene Welding		
Electrode	MMA Welding					
Cored Wire	MIG Welding			Submerged Arc Welding		
Powder	PTA Cladding	Laser Cladding	HVOF Spraying	Powder Welding	Spray&Fuse	ALM

TYPICAL STRUCTURES



Casted DelStar® Co6 Alloy (Resin Shell Casting)



Welded DelStar® Co6 Alloy (Plasma Powder Cladding)

Deloro Wear Solutions GmbH manufactures and markets sophisticated alloys in the form of castings, powders, coatings, consumables, and machined parts that resist wear, corrosion, and abrasion. Information provided in this document is intended only for general guidance about Deloro Wear Solutions™ products and is the best information in our possession at the time. Product users may request information about their individual use of our products, but Deloro Wear Solutions™ does not warrant or guarantee this information in any way. Selection and purchase of Deloro Wear Solutions™ products is the sole responsibility of the product user based on the suitability of each use. Individual applications must be fully evaluated by the user, including compliance with applicable laws, regulations, and non-infringement. Deloro Wear Solutions™ cannot know or anticipate the many variables that affect individual product use and individual performance results may vary. For these reasons, Deloro Wear Solutions™ does not warrant or guarantee advice or information in this document, assumes no liability regarding the same, and expressly disclaims any warranty of any kind, including any warranty of fitness for a particular purpose, regarding the same.